

Serial No. 09,515,348
Attorney Docket No. F0039
Firm Reference No. AMDSP0388US

Reply to Office Action Dated February 25, 2004 filed with RCE
and Petition For A One-Month Extension Of Time
Reply Dated June 25, 2004

REMARKS

Following entry of this amendment, claims 1-24 will be pending. Claim 1 has been amended. Claims 21-24 have been added.

I. REJECTION OF CLAIMS UNDER 35 U.S.C. § 102

Claims 1-3, 7-9 and 13-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Pierrat et al., U.S. Patent No. 6,091,845 A, ("Pierrat"). Withdrawal of the rejection is respectfully requested for at least the following reasons.

Pierrat discloses a technique for inspecting photomasks by comparing a pair of simulated resist images. See, for example, the Abstract. One of the simulated images 180 is created using a mask image acquired by an inspection machine. The other simulated image 185 is created using original mask pattern data from a mask pattern database 150 (die-to-database). See, for example, Fig. 1 and Col. 6, lines 39-44. Pierrat also discloses a die-to-die inspection system. An image simulation 180 corresponding to a first pattern 160.1 is compared to an image simulation 182 corresponding to a second pattern 160.2. See, for example, Fig. 2 and Col. 6, lines 45-67. However, Pierrat does not disclose evaluating a photomask by comparing a simulated wafer structure to a resulting wafer structure, wherein the resulting wafer structure is an ideal target layer structure on a wafer.

Claim 1 as amended includes, *inter alia*, "evaluating the portion of the mask by comparing a simulated wafer structure to a resulting wafer structure, wherein the resulting wafer structure is an ideal target layer structure on a wafer." In contrast, Pierrat discloses inspecting photomasks by comparing a simulated image of an original pattern compared to a simulated image generated from a pattern captured from a photomask manufactured from the original pattern. Pierrat also discloses comparing simulated images generated from captured data from two different instances of the same original pattern formed in a photomask. See, for example, the Abstract. Pierrat does not disclose comparing a simulated wafer structure to a resulting wafer structure. Further, Pierrat does not disclose the resulting wafer structure is an ideal target layer structure on a wafer as recited in claim 1.

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Therefore, since Pierrat does not teach or suggest one or more of the features as claimed in amended claim 1, claims 1-3, 7-9 and 13-20 are patentable over Pierrat.

II. REJECTION OF CLAIMS UNDER 35 U.S.C. § 103

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Garza et al., U.S. Patent No. 6,081,659 A, ("Garza") and Pierrat. Withdrawal of the rejection is respectfully requested for at least the following reasons.

Garza discloses comparing a simulated image that represents a simulator's estimation of a photoresist pattern to an actual photoresist pattern. Additionally, Garza discloses iteratively modifying a simulation routine to more accurately predict and simulate the photoresist pattern such that a subsequent simulated image more accurately approximates the actual photoresist pattern. See, for example, Fig. 7, Col. 9, lines 6-59. Garza does not disclose a method for evaluating a photomask by comparing a simulated wafer structure to a resulting wafer structure, wherein the resulting wafer structure is an ideal target layer structure on a wafer as recited in claim 1. In contrast, Garza discloses iteratively comparing simulated images to actual images to more fully understand the deficiencies of the simulation model. See, for example, Col. 9, lines 38-59. Thus, the actual photoresist of Garza is not an ideal target layer structure as recited in amended claim 1. Pierrat, for at least the reasons stated above, does not make up for the deficiencies of Garza.

Therefore, since Garza alone or in combination with Pierrat does not teach or suggest one or more of the features as claimed in amended claim 1, claim 1 is patentable over Garza and Pierrat.

Claims 4-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Pierrat and Fiekowsky. Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Pierrat and Sheng, U.S. Patent No. 6,477,265 A, ("Sheng"). Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Pierrat and Sheng, and further in combination with Fiekowsky, U.S. Patent No.

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6,263,292 B1, ("Fiekowsky"). Withdrawal of the rejections is respectfully requested for at least the following reasons.

Claims 4-6 and 10-12 are patentable over Pierrat for at least the reasons stated above with regard to amended claim 1. Sheng and Fiekowsky alone or in combination do not make up for the deficiencies of Pierrat. That is, neither Sheng and/or Fiekowsky teach or suggest evaluating a mask by comparing a simulated wafer structure (image) to a resulting wafer structure, wherein the resulting wafer structure is an ideal target layer structure on a wafer. Sheng discloses a system and method for detecting defects in integrated circuit wafers related to photolithographic processing of the wafers. Abstract. Fiekowsky discloses a measurement tool that objectively and repeatedly measures defects for determining photomask disposition. Col. 4, lines 19-25. Further, the resulting method from the combined teachings of Pierrat and Sheng and/or Fiekowsky would not result in the method that evaluates a mask as recited in amended claim 1. Thus, there would be no motivation to combine the teachings of Pierrat with Sheng and/or Fiekowsky.

Therefore, since Pierrat alone or in combination with Sheng and/or Fiekowsky does not teach or suggest one or more features as claimed in amended claim 1, claims 4-6 and 10-12 are patentable over Pierrat alone or in combination with Sheng and/or Fiekowsky.

III. NEW CLAIMS

The newly added claims, i.e., claims 21-24, claim additional novel and unobvious features of the present invention. The features of claims 21-24 are supported by the specification and no new matter is believed to be added. See, for example, page 5, lines 8-9, page 9, lines 9-12, page 11, lines 26-29 and page 21, lines 11-13. Therefore, claims 21-24 are patentable over Pierrat alone or in combination with Garza, Sheng and/or Fiekowsky.

IV. CONCLUSION

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the

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application is not in condition for allowance, the Examiner is invited to initiate a telephone
interview with the undersigned attorney to expedite prosecution of the present invention.

Any fee(s) resulting from this communication is hereby authorized to be charged to our
Deposit Account No. 18-0988; Our Order No. F0039 (AMDSP0388US).

Respectfully submitted,
RENNER, OTTO, BOISSELLE & SKLAR, LLP



Andrew Romero, Reg. No. 43,890

1621 Euclid Avenue, 19th Floor
Cleveland, Ohio 44115-2191

Telephone: (216) 621-1113

Facsimile: (216) 621-6165

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